Sulfur, sulphur dioxide and sulphuric acid

1. Sulfuric acid is used in lead-acid batteries that are used in cars.

The overall equation for the reactions that occur when the lead-acid car battery

is being discharged (used) is:

Pb + PbO2 + 2H2SO4 → 2PbSO4 + 2H2O

Lead sulfate, PbSO4, forms as the battery discharges.

Analyse the role of the sulfuric acid solution in the reactions of the lead-acid

battery.

In your answer include:

• the properties of sulfuric acid solution that make it a good conductor of

electricity

• how the concentration of sulfuric acid changes while the battery is discharging AND while it is charging.

2. Sulfur in its pure form reacts with oxygen.

(a) Describe an observation made of the product formed in the reaction of sulfur with oxygen.

(b) Write a balanced equation for this reaction.

(c) Pure water is a poor conductor of electricity, but a solution of sulfuric acid in

water is a good electrical conductor.

Explain why the sulfuric acid solution conducts electricity so well. Include a

balanced equation in your answer.

3. A solution of sulfuric acid in water is used in lead-acid batteries found in cars

Discuss the role of sulfuric acid solution in the reactions of a lead-acid battery.

Your answer should include:

• the properties of sulfuric acid that make it a good electrolyte

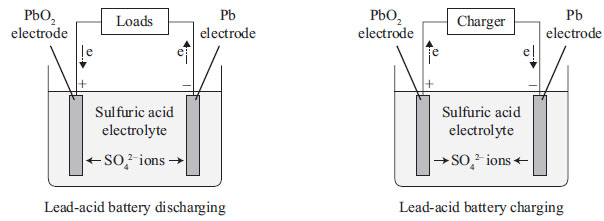
• how sulfuric acid is involved in the reactions that occur when the battery is

discharging **and** when it is charging

• how the concentration of sulfuric acid changes while the battery is discharging

**and** while it is charging

• any relevant balanced equations.

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